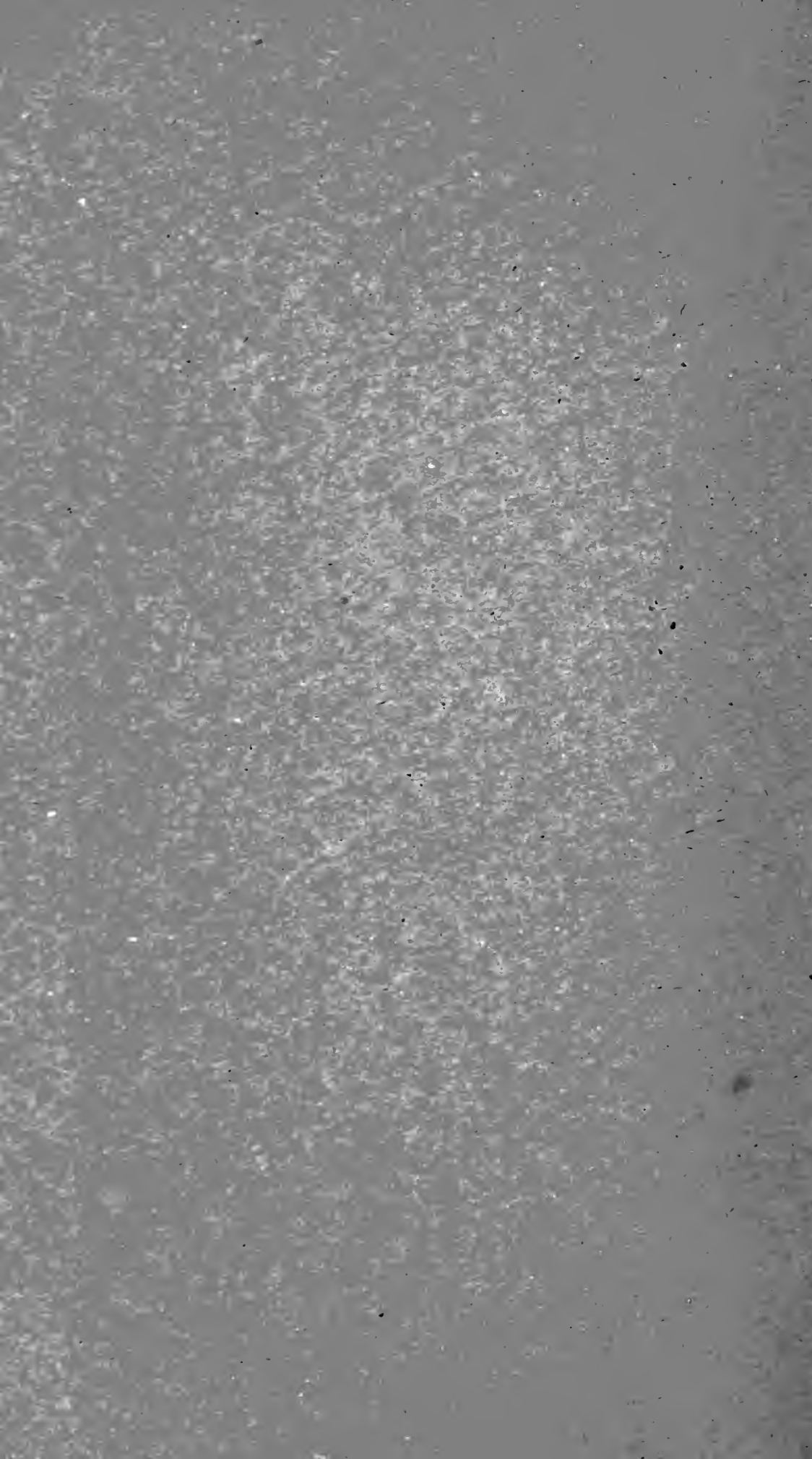


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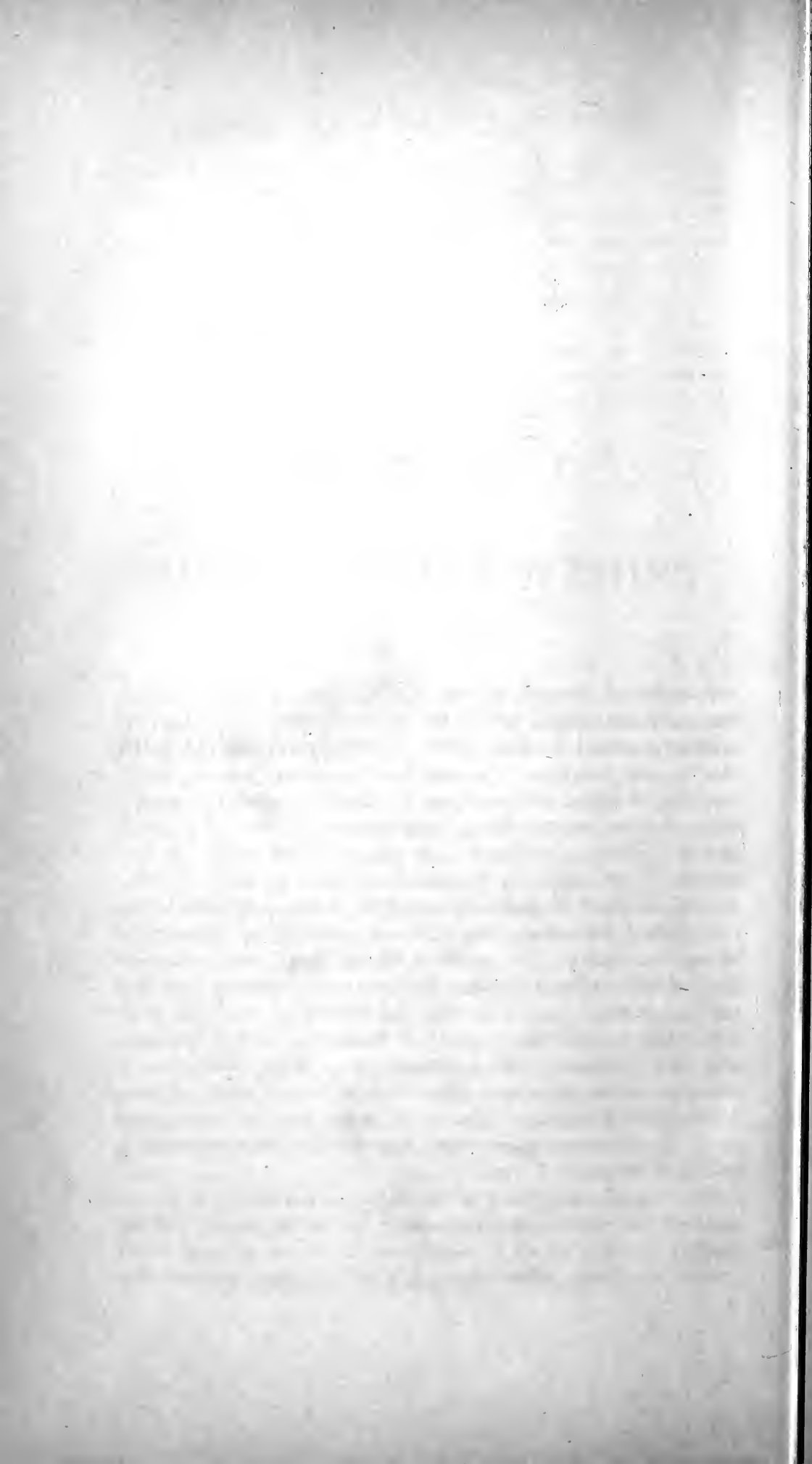


Chambers, Robert

TESTIMONY:

ITS

POSTURE IN THE SCIENTIFIC WORLD.



TESTIMONY:

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POSTURE IN THE SCIENTIFIC WORLD.

THE study of natural science, during the eighteenth century, has manifestly given a turn to the habits of mankind in regard to matters presented for their belief. Where a mathematical demonstration can be given, or a described experiment can be readily repeated, or where new facts can be shewn in relation to already acknowledged natural laws, acceptance is, as formerly, certain and immediate; but where an alleged phenomenon is only occasional, not liable to be reproduced at will, and a relation to acknowledged natural laws cannot be at once established, then it is rejected, notwithstanding almost any amount of evidence for its external reality. The physicist reasons thus: It is much more likely that the witness has been deceived, or is deceiving, than that the fact is true; *ergo*, I do not feel warranted to listen to it. The result is, that the progress of knowledge is very irregular, somewhat resembling the movements of an army, of which some battalions are in vigorous health, while others are sickly or overburdened with baggage. The experimental marches on at a good pace; the observational proceeds but slowly; the speculative is left far in the rear.

The scientific scepticism of our age professes to spring from a sense of the extreme fallaciousness of the human senses, and the liability besetting us all to deceive ourselves into a belief which gratifies the faculty of wonder. It is held as a rare and valuable

gift to be able to observe a fact correctly. We are pathetically told that what a man thinks he saw, is often a mere hypothesis of his imagination as to what he saw, and may be wholly wrong. Commonplaces about the love of telling something wonderful, and of imposing upon the credulity of our fellow-creatures, are largely indulged in. It is confessed that the physicists themselves daily find reason to distrust their own powers of observation : how much more is it necessary to exercise caution regarding the reports of ordinary and uninstructed men ! It thus appears justifiable to the man of science that, when any extraordinary natural fact is laid before him, he should admit no evidence for its verity which is not 'beyond suspicion, and absolutely incapable of being explained away.'* If he can presume any error in the statement, arising from any cause whatever, he is not merely entitled, but bound to reject it. Practically, accordingly, all such facts *are* rejected, for there is of course no extraordinary fact resting on testimony only, of which it is not possible to presume some error in the observation or reporting, if we be set upon finding one.

Professor Faraday, defending the scepticism of his class, endeavours to shew that, while we owe so much to the senses at every stage of life, there is no trusting them unless the judgment has been largely cultivated for their guidance. 'Where this instruction is imperfect,' says he, 'it is astonishing how soon and how much their evidence fails us.' Greater mistakes still take place when we proceed to deduce from the impressions supplied by our experience the relation of cause and effect. There is then no safety but in a knowledge of the laws of nature. These, being of unfailing constancy, he considers to be 'the *foundation* of our knowledge in natural things' (Italics his own). Whatever is inconsistent with them, we ought to know must be false, be the nature and amount of testimony advanced in its favour what they may. It becomes necessary, in his view, that, in 'proceeding to consider any question involving physical principles, we should set out with *clear ideas* of the naturally possible and impossible.' He takes an example. To create force is impossible. 'If we could by the fingers draw a heavy piece of wood or a stone upward without effort, and then letting it sink, could produce by its gravity an effect equal to its weight, that would be a creation of force, and *cannot be.*' The learned professor adds much more to the same general conclusion—namely, that none but very cultivated persons

* *Mesmerism True, Mesmerism False.* By Sir John Forbes.

can observe with even an approach to accuracy, and that a clear knowledge of the laws of nature will alone enable us to decide on the truth of any fact presented to us.*

The difference which exists between this—the physicist's view of facts and testimony—and that usually presented in books of mental philosophy, is very striking.

Dr Abercrombie, in his well-known work, *Inquiries Respecting the Intellectual Powers and the Investigation of Truth*, considers the reception of facts on testimony as 'a fundamental principle of our nature, to be acted on whenever we are satisfied that the testimony possesses certain characters of credibility. These,' he adds, 'are chiefly referrible to three heads: that the individual has had sufficient opportunity of ascertaining the facts; that we have confidence in his power of judging of their accuracy; and that we have no suspicion of his being influenced by passion or prejudice in his testimony, or, in other words, that we believe him to be an honest witness. Our confidence,' says Dr Abercrombie, 'is further strengthened by several witnesses concurring in the same testimony, each of whom has had the same opportunities of ascertaining the facts, and presents the same characters of truth and honesty. On such testimony, we are in the constant habit of receiving statements which are much beyond the sphere of our personal observation, and widely at variance with our experience. These are the statements which, for the sake of a name, we may call marvellous. In regard to such, the foundation of incredulity . . . is generally ignorance; and it is interesting to trace the principles by which a man of cultivated mind is influenced, in receiving upon testimony statements which are rejected by the vulgar as totally incredible.

'1. He is influenced by the recollection, that many things at one time appeared to him marvellous, which he now knows to be true; and he thence concludes that there may still be in nature many phenomena and many principles with which he is entirely unacquainted. In other words, he has learned from experience not to make his own knowledge his test of probability.

'2. He is greatly influenced by perceiving in the statement some element of probability, or any kind of sequence or relation, by which the alleged fact may be connected with principles which are known to him. It is in this manner that the freezing of water, which was rejected by the king of Siam as an incredible

* *Observations on Mental Education, a Lecture delivered at the Royal Institution before H.R.H. Prince Albert.* By Professor Faraday, F.R.S., May 6, 1854. London: Parker.

falsehood, might have appeared credible to a philosopher who had attended to the properties of heat, because he would have perceived in the statement a chain of relations connecting it with facts which he knew to be true.

‘3. He is much guided by his power of discriminating the credibility of testimony, or of distinguishing that species and that amount of it which he feels to be unworthy of absolute credit, from that on which he relies with as implicit a confidence as on the uniformity of the course of nature.’

Here, it will be observed—while a relation to known principles is allowed to be influential in inducing belief—the general receivableness of marvellous facts, upon the testimony of a number of honest, unprejudiced witnesses, is fully and unhesitatingly asserted. The incredulity which Mr Faraday spoke of as an attribute of the most highly cultivated judgment, is adverted to as generally a result of ignorance. It is here presumed that, with more light, men would go on to a freer believing, not to scepticism. Experience is adduced as preparing us rather to accept marvellous facts than to receive them with doubt. Even miracles, which Dr Abercrombie defines as events ‘directly opposed to what every one knows to be the established and uniform course of nature,’ are not beyond the powers of testimony; they only require a high kind of it, a kind ‘on which we rely with the same confidence as on the uniformity of the course of nature itself.’ Here, he says, ‘we have two amounts of probability, which are equally balanced against each other; namely, the probability that such testimony should not deceive us, and the probability that there should be no deviation from the course of nature. *The concurring evidence of numerous credible witnesses gives a decided preponderance to the testimony; and upon a certain amount of testimony we might receive any statement, however improbable.*’ There might still remain an ‘uncertainty, in regard to any judgment which we could form respecting it;’ but a distinct belief might be fixed if the event could be referred to a power capable of producing it, namely, the Deity, and if we could perceive a high moral object in his presumed interposition.

It so happens that the religion which the most enlightened nations of the earth have received and profess, rests on a series of occurrences which took place between eighteen and thirty-six centuries ago, and which have been recorded in historical narratives. Many persons having doubted these alleged facts, a set of writers well affected to the Christian religion have come forward as its apologists or defenders; and a leading part of their

works on the subject consists in a treatment of the laws of evidence as to facts, resulting in a conclusion that the occurrences in question, though of a nature not merely extraordinary, but apparently supernatural, being vouched for by a sufficient number of credible witnesses, ought to be implicitly believed. None of these apologists stands more prominently forth than the late Dr Chalmers, nor was the personal faith and practice of any more incontestable. In his work, *The Evidence and Authority of the Christian Revelation*, while not overlooking that many Christians have all they require in the truth which has come home to them 'in demonstration of the Spirit and of power,' he deals with the unbeliever entirely on the ground of the verity of the historical facts above alluded to. Considering the gospel as a message, he inquires if we know enough of the messengers to pronounce upon their credibility. 'Had they,' says he, 'the manner and physiognomy of honest men? Was their testimony resisted, and did they persevere in it? Had they any interest in fabricating the message, or did they suffer in consequence of this perseverance? Did they suffer to such a degree as to constitute a satisfying pledge of their integrity? Was there more than one messenger, and did they agree as to the substance of that communication which they made to the world? Did they exhibit any special mark of their office as the messengers of God; such a mark as none but God could give, and none but his approved messengers could obtain the possession of? Was this mark the power of working miracles; and were these miracles so obviously addressed to the senses as to leave no suspicion of deceit behind?' 'On the solution of these [points],' he adds, 'do we rest the question of the truth of the Christian religion.'

Dr Chalmers argues, in a way which has been felt by a large portion of the public as satisfactory, that the alleged facts rest, in these respects, upon perfectly good evidence. Even in their supernaturality he sees no true objection. The supposition that the first Christians may have been mistaken as to the subject of their testimony, is, according to him, 'destroyed by the nature of the subject. It was not testimony to a doctrine which might deceive the understanding. It was something more than testimony to a dream, or a trance, or a midnight fancy, which might deceive the imagination. It was testimony to a multitude and a succession of palpable facts, *which could never have deceived the senses*, and which preclude all possibility of mistake, even though it had been the testimony of only one individual.'

Dr Chalmers professes, in this discussion, to walk by the

Baconian philosophy. He fully acknowledges that knowledge can alone be founded on observation, and that we learn 'by descending to the sober work of seeing, and feeling, and experimenting.' He professes to base his theology purely upon induction. He prefers what has been 'seen by one pair of eyes' to all reasoning and guessing. In his essay, however, there is no laborious attempt to shew the difficulty of correctly observing a fact. We have nothing from him about the aptitude of the senses to be deceived, and our liability to mistake a hypothesis for a simple object or occurrence. He does not propose that we only receive the marvellous facts of Scripture if we cannot explain them away. Neither does he call for a test being applied to supposed facts before we proclaim them as such. He does not ask us to start with a clear understanding of what is possible or impossible; he does not demand that we should sternly reject anything on the ground of its being inconsistent with the law of gravitation or any other law. What *he* requires of us 'on entering into any department of inquiry,' as the best preparation, is a very different thing—namely, '*that docility of mind which is founded on a sense of our total ignorance of the subject.*'

No contrast could well be more complete. In the one case, testimony regarding assumedly natural, though novel facts and occurrences, is treated with a rigour which *would enable us to battle off anything whatever that we did not wish to receive*, if it could not be readily subjected to experiment, or immediately shewn in a fresh instance—and perhaps even then. In the other, the power and inclination of men to observe correctly any palpable fact, and report it truly, is asserted without exception or reserve; and, on this ground, even facts assumed to be miraculous, or beyond the ordinary routine of nature, are held as triumphantly substantiated.

It is plain that one or other of these two views of testimony must be wholly, or, in a great degree, erroneous, as they are quite at issue with each other. It becomes of importance, both with a regard to our progress in philosophy and our code of religious beliefs, to ascertain which it is that involves the greatest amount of truth. The scientific view, as the new and intruding one, first challenges examination.

In considering this view of fact-observation and testimony, we are struck at the very outset with its want of harmony with the ordinary practices of men, as well as with those conceptions of human conduct and motive which the experience of ages has established. Every hour of our lives, we place reliance, in matters of more or less importance, on the fidelity of our senses, and an

assumed habit in ourselves and others of speaking the truth. We know, of course, that a person who has an interest in deceiving us, whether to gain an advantage, or escape a loss or a punishment, or even a reproach, will perhaps do so. We know that there is such a thing as weakness of perception and of judgment, and a tendency to exaggeration, either of which will occasionally bring us reports in some degree false. Yet we constantly act, and feel justified by experience, in acting, as under a belief that men *in general* both observe matters of fact correctly and wish to speak the truth about them, and, when deranging circumstances are excluded, actually do so. Accordingly, thousands of merchants every morning proceed in serious affairs upon the faith of their correspondents. Life-assurance companies yearly undertake hundreds of risks on lives, resting wholly on the good faith of the evidence they receive from the medical attendants and private friends of the parties, as to their habits of life and present state of health ; and so much is this matter of routine, that only some glaring and singular circumstances would cause a suspicion to be entertained regarding the fidelity of any of the persons giving such testimony. Daily do hundreds of news-sheets publish multifarious collections of intelligence, much of it of an extraordinary and unlooked-for character, and the constant wonder is, and may well be, how little of error, particularly of wilful error, there is mixed up with it. Even courts of law, while feeling a peculiar need in their case for guarding against interested witness-ship, do yet maintain liberal views of human testimony in general. Sanity, mature age, and a presumable absence of motive for concealment and misrepresentation, are their requisites for receivable witnesses : we never hear from them any complaints of that bare possibility of seeing facts truly which gives such concern to Mr Faraday.

And, obviously, it is necessary for the procedure of social life and the advance of knowledge, that some such degree of faith should be attached to human testimony. Just suppose for a moment that every fact reported to us by others were viewed in the light of the sceptical system, as to the fallaciousness of the senses and the tendency to self-deception. Should we not from that moment be at a stand-still in all the principal movements of our lives ? Could a banker ever discount a bill ? Could a merchant believe in a market-report ? Could the politician put any trust in the genealogy of the monarch ? Could we rest with assurance upon any legal deed or document heretofore thought essential to the maintenance of property ? Could evidence for the condemnation of the most audacious and dangerous criminal be

obtained? Each geologist distrusting his neighbour as to the actuality of the find of fossils in certain strata, what would be the progress of that science? Could we, with any face, ask the young to believe in a single fact of history, or geography, or any science concerned in education? What could be more seriously inconvenient to mortals, short of the withdrawal of the sun from the firmament, than the abstraction of this simple principle from the apparatus of social life, that we can all tolerably well apprehend the nature of an event or fact presented to our senses, and give a fair representation of it in words afterwards?

I must also make bold to say that the sceptical view appears to me out of harmony with the inductive philosophy. Bacon gives us many warnings against preconceived opinions and prejudices; but he does not bid us despair of ascertaining facts from our own senses and from testimony. He laments that there is an impediment in the acquisition of knowledge from the sense of sight being unable to penetrate 'the spiritual operation in tangible bodies;'^{*} but he nowhere tells us that sight is so fallacious that we require a corrective power to assure us that we have really seen anything. Bacon may be said negatively to assume a certain accuracy in perception and a certain fidelity in reporting, as properties of human nature essential to the carrying out of his system. What is of still more consequence, we do not find in Bacon any dogma like that of Mr Faraday, that 'the laws of nature are the *foundation* of our knowledge in natural things,' and that these form our only safe test for any new fact presented to our observation. Bacon's method is rather the contrary, namely, that facts are to serve as the foundation of the laws of nature. When Mr Faraday tells us to set out with clear notions of what is possible, it may be asked, in the spirit of Bacon, who can tell beforehand what is possible? When we have acquired the whole range of knowable facts, we may be able to tell, but not till then. By way of illustrating his dogma, he sets forth the axiom that to create force is impossible. Well, it is so. When Oersted discovered magnetism in electricity, and by seeking, *e converso*, to draw electricity from a permanent magnet, seemed to have arranged for a creation of force, it was Mr Faraday who shewed that the power obtained only compensated for the motion required to be expended in the magnets producing the electric currents, and therefore force could not be so created. We fully grant the principle of which he has furnished so interesting an illustration.

^{*} *Novum Organum*, Book I., aphorism 50.

But when Mr Faraday proceeds to say that for any person to draw a heavy object by his fingers, would be creating a force, 'which cannot be,' he clearly goes beyond the limits of his axiom. Suppose that a heavy object were to follow the fingers of an experimentalist, the cause of it might be only some already existing, though unknown and mysterious force—one force simply overcoming another. This is not saying that any such force exists in the fingers of the human subject : it is only saying that, if any sufficient number of persons allege that such has been with them matter of observation, an *a priori* objection, to the effect that no such force exists, can only be considered as a *petitio principii*. That there *are* recognised forces by which gravitation can be overcome, and these of a sufficiently mysterious character too, is known to the merest tyro that ever used a magnet in raising a few iron filings ; and, it may be reasonably asked, who can tell how many such forces there may be ? 'In the world around us,' says Dean Trench (*On Miracles*), 'we continually behold lower laws held in restraint by higher, mechanic by dynamic, chemical by vital, physical by moral.*' Instead of ignoring this obvious text, Mr Faraday would need to supply us with a rule by which we might ascertain that the alleged new facts do not belong to a higher law than any now recognised.

In short, this sceptical method consists very much in vicious circles. You cannot know whether a fact be a fact till you have ascertained the laws of nature in the case, and you cannot know the laws of nature till you have ascertained facts. You must not profess to have learned anything till you have ascertained if it be possible, and this you cannot ascertain till you have learned everything. The assumption of a right to repudiate any extraordinary fact, largely attested, if weakness, bias, mendacity, or any other supposition can explain it away, in truth puts theory virtually before and above fact, as far as testimony is concerned—indeed, *annihilates* testimony—and, if really acted on, would leave

* M. Chabert, the Fire-king, took prussic acid in the presence of the company assembled to see his exhibitions. 'To some uneducated persons, the fact that he took this deadly poison into his stomach without harm to his person, would seem supernatural or miraculous. But there is another law to be taken into account. The chemist knows that this acid has a strong affinity for earths and alkalis, and readily combines with them ; and that, when in combination with some other substances, it becomes perfectly harmless. M. Chabert took advantage of this other law. He guarded the surface of his gullet with a coating, and took his antidote in advance. The prussic acid was not allowed to come in contact with his corporeal system, until it had been converted into a harmless salt.'—*Woodman's Reply to Dwight*, Portland, U. S., 1857, p. 39.

science in a state so thoroughly crippled, that it could scarcely afterwards be said to exist.

And such is really the operation of this maxim, as far as it is acted on. Science is continually deprived of the benefit of fresh facts depending on human testimony, and which are not readily explicable on known principles, because it chooses to be quite unsatisfiable regarding their verity. Its history is full of instances of such matters long kept out of the temple by reason of the scepticism of the priests, and which have only been forced in at last against their will. For example, the fall of meteoric stones was occasionally reported by good witnesses during many ages. But science did not understand how stones should be formed in or beyond the atmosphere ; its dignity was offended, perhaps, by the vulgarity of some of the surmises on the subject, as that the stones fell from the moon. The accounts of the fall of meteoric stones were held to be incompatible with the laws of nature, and specimens which had been seen to fall by hundreds of people were preserved in cabinets of natural history as ordinary minerals, ' which the credulous and superstitious regarded as having fallen from the clouds.' A committee of the French Academy of Sciences, including the celebrated Lavoisier, unanimously rejected an account of three nearly contemporary descents of meteorolites which reached them on the strongest evidence. After two thousand years of incredulity, the truth in this matter was forced upon the scientific world about the beginning of the present century. There would have been at any time, of course, an instant cessation of scepticism if any one could have shewn, *a priori*, from ascertained principles in connection with the atmosphere, how stones were to be expected to fall from the sky. But what is this but to say that facts by themselves, however well attested, are wholly useless in such circumstances to the cultivators of physical science, while any kind of vague hypothesis can be brought forward in opposition to them ? What is it but to put conjecture or prejudice above fact, and indeed utterly to repudiate the Baconian method ?

The positive harmfulness of the sceptical view of testimony to the interests of science, and by consequence the interests of humanity, was well illustrated a few years ago, when it was announced from India that many operations had been performed upon natives in the hospitals there, painlessly, by their being merely thrown beforehand into what was called the mesmeric sleep. Though the reporting surgeons were most respectable men, the fact was disbelieved, and the profession at home refused to attempt its verification. When one adventurous surgeon at length reported

to the Royal Medical and Chirurgical Society in London, that he had had a patient in the Wellow Hospital, Nottinghamshire, thrown into the mesmeric sleep by a gentleman, a barrister of the Middle Temple, and that he had then amputated the man's leg, without producing a twitch in his countenance, the patient declaring at the end that he had felt no pain, there was a burst of contemptuous incredulity as to the facts, nearly the whole assembly preferring to believe that the gentlemen were a pair of impostors, or that the patient had feigned insensibility. To all appearance, the anæsthetic condition resulting from mesmeric sleep would have been permanently denied in spite of all evidence on the subject, and a blessing to humanity would consequently have been lost ; but the problem was interrupted by the discovery of a chemical means of producing the same insensibility, by which mesmerism in such cases was superseded. Chloroform being in obvious relation to other toxicants, no difficulty was expressed regarding it, as far as the mere fact of its power of producing insensibility was concerned. But we see that, in the other case, facts coming forward simply on human testimony, and without co-ordination with some recognised principle, met only a scornful rejection.

The whole history of mesmerism throws an interesting light on the present discussion, for, as far as it has yet been accepted as true—and no doubt seems now entertained regarding the trance-sleep, insensibility to pain, subjection to the will of another, and some others of the phenomena—the credit has been due wholly to unscientific persons.* The rôle of the physicist, during a course of years, while the matter was under trial, was to utter derisive

* 'No better illustration of the true character of Mr Hallam's mind could perhaps be offered than the whole of his conduct and language through life on the strange but important subject of mesmerism. He used to tell how he and Rogers had, long years before anybody in England had revived the subject, seen in Paris, and carefully tested phenomena which could not possibly leave them in any doubt of the leading facts of animal magnetism. He used to tell that they were so insolently and rudely treated, at friends' tables, on their saying what they had seen, that there was no course to take, in consideration for the host, but silence ; and then that as fact after fact came out, one after another became convinced ; till at last even physicians grew grave and silent. "Rogers and I," he used to say, "have had the experience which is too rare to be had so often as once in a century—that of witnessing the gradual reception by a great metropolis of a great new fact in natural science." . . . His conclusion was at the service of all who asked for it. His words, written and spoken, were : "On the whole, there remains no doubt in my mind that mesmerism and some other things, that are not mesmerism so called, are fragmentary parts of some great law of the human frame which we are on the verge of discovering."—*Memoir of Henry Hallam, Daily News, January 25, 1859.*

shouts, to proclaim *charlatanerie*, and shew the inconsistency of the alleged facts with the laws of nature. But for an irregular corps of experimentalists, who were not to be awed into quiescence by *a priori* objections from authoritative sources, this interesting group of natural truths, for anything that appears, would have remained totally undeveloped. It is ever so. The physicist, either from narrowness of mind induced by the pettiness of his special studies, or from a fear of losing what reputation he may have acquired, or from the vanity of appearing incredulous (for here lies a temptation very besetting to human nature), sets himself in opposition to all such new doctrines. He not only does nothing for their advancement, but he seeks by all means to put them down, as if—since he can have no gain by them in any way—he felt personally aggrieved by the notice which they attract.

When the physicist is driven to give reasons for the want of faith that is in him, we usually find him resorting to notorious instances of the discrepancy, the error, and the failure of testimony. He cites the well-known story of Sir Walter Raleigh, who, hearing a quarrel take place below his windows, and receiving from those engaged in it various accounts of what had taken place, exclaimed : ‘ What dependence can I have on the alleged events of ancient history, when I find such difficulty in ascertaining the truth regarding a matter that has taken place only a few minutes ago, and almost in my own presence !’ He reminds us of frauds, impostures, and matters of illusion amply certified, and of many things unhesitatingly accepted at the time, which we know to be impossible.

Now, it is quite true that, in a matter where men’s passions and interests have been highly excited, they will give discrepant reports, as they did in the case noticed by Raleigh. It is also true, that in any complicated affair, as a battle or a tumult, where there are many persons concerned, and much ground covered, each person will have a report to give somewhat different from his neighbour, for the very good reason that each has actually seen something different from his neighbour. But it is obvious that all such variances can be allowed for, and we may still have a large residuum of truth. The plain and palpable facts that there was a battle or a tumult, that certain general appearances were presented, and certain results followed, will not be in the least invalidated by a consideration of minor differences amongst the reporters. What is reasonable here, is to make some allowances for particular feelings and for special points of view, not to repudiate the whole testimony.

As to frauds, impostures, and matters of illusion, rashly vouched

for, it may be said that, in general, there never was any necessary difficulty in detecting the falseness of the testimony from the beginning. It will usually be found that, in such matters, two things wholly different were vouched for—namely, something actually seen, and a presumptive character of the thing seen, or else that the reporter was not a direct witness, but only spoke on the faith of general rumour. In the sixteenth century, a Silesian child was alleged to have a tooth of gold, and many testified to having seen it. They were right as to their having seen an object which was called and bore the appearance of a tooth of gold; but they were wrong as to the presumptive character of the object, which was only a common tooth covered artificially with gold. So, likewise, as to that modern marvel, the sea-serpent. There is an overwhelming probability that no such creature exists; but it is acknowledged that a spar covered with sea-weed and barnacles, and a certain South-sea seal going rapidly through the water, assume nearly the appearances which have been described as belonging to the sea-serpent;* so we may conclude that the reporters have faithfully reported an object seen, and only erred in their statement of the presumptive character of what they saw. We read, in the books of medieval travellers, many absurd statements as to marvellous things existing in different countries; but it is easy to see that they are nearly all matters of vulgar rumour: what the writer speaks of from personal observation, though marvellous, and disbelieved at first, is usually found, sooner or later, to be near the truth.† If we rightly view, then, these frauds, impostures, and matters of illusion, we shall in reality see ground for increasing our faith in human testimony, for we shall always find that a ‘palpable fact,’ which a multitude of competent witnesses alleged they saw, *was really seen*, albeit they might be mistaken as to what it was.

Regarding things once unhesitatingly vouched for, which we now know to be ‘impossible,’ a more important remark may

* So the writer heard stated in the spring of 1853 by Professor Owen, in a lecture at the Geological Museum, Jermyn Street.

† With reference to the works of Marco Polo and Sir John Mandeville, a modern writer remarks: ‘What is told by them on their own evidence of inspection or information on the spot, is commonly perfectly correct, and judiciously related. The bad name which such writers have unjustly acquired, is owing to the same causes which procured them the equally ill-judged admiration of the readers of their day; namely, the amazing credulity of their contemporaries, and the little pains which have since been taken to separate the matter of lightly received hearsay from that of experiment and personal observation: which are blended together more from want of judgment, than of honesty and veracity.’—*Retrospective Review*, vol. iii. (1823), p. 273.

be ventured on. Are we always sure that these things *are* impossible? Sixty years ago, if any one had been pleading with Lavoisier for the value of human testimony, the latter most probably would have deemed it a sufficient answer to point to the many well-authenticated instances of *that impossibility, the fall of meteoric stones!* Yet meteoric stones have proved to be a verity, and not an impossibility. About the same time, the fact of so many Gloucestershire peasantry having attested the prevention of small-pox by a virus from the teats of a cow, would have been deemed a sufficient answer to the same pleading, by nine out of every ten of the best educated physicians in England. Jenner's statue in Trafalgar Square tells us how fallacious the objection would have been. It is to be observed regarding such objections, that they are almost invariably gratuitous and unproved. Were they always put to the test of experiment, how many might prove like meteorolites and vaccination! We may, indeed, set it down as an absolute certainty, that many things are erroneously deemed impossible; for, till we know all the possible—and how far we are from that need not be insisted on—how can we know what is impossible? Objectors can justly speak of a highly improbable at the most, and then the question will lie between this improbability and their own fallibility. Now the fact is, that they have neglected whole fields of the universal system of things, because of the inapplicableness of the experimental method there, or from taste, or caprice; and, for anything they can tell, hundreds of things in those fields, now pronounced to be impossible, may yet prove to be truths.

Let us here suppose a case by no means unlikely to happen in our age. A steamer passes for the first time along a shore, the people of which, remote from the world, yet not without intelligence, never before saw such a vessel. A group of fishermen come to an inland town, and report to their patriarch or ruler that they had seen a ship moving along against the wind, with no visible means by which it was impelled. If there was a wary cultivator of science present, he would say: 'It must have been a mistake of your senses, which are extremely liable to deception at all times, but particularly so when anything wonderful is in question. To have been able to report justly on this subject, you should have all had your senses philosophically trained beforehand; in which case, and if you had started with a just sense of what is *possible* in navigation, you would have never brought us so foolish a tale.' When the master of the steamer afterwards landed, and explained how the ship was moved, this incredulity

would of course vanish. Now, could anything be more preposterous than either the rejection of the testimony of a number of credible persons in so palpable a matter of fact, on the ground that scientific mistakes were sometimes made, or the making the receipt of the testimony of a number of honest witnesses depend on the accident of a possible immediate explanation of the fact witnessed? Yet such would be the predicament of Mr Faraday in the case, if he were to carry out the principle he has announced.

Let us take still another illustration: Not many years ago, it might have been a very serviceable argument against the value of human testimony for extraordinary facts, that there was such powerful witness-ship for the multitudes of confessors whom Hunneric, king of the Vandals, deprived of their tongues, and who nevertheless continued to speak! Victor, bishop of Vite, Æneas of Gaza, Procopius, the Emperor Justinian, Pope Gregory—seven writers in all, six of them contemporary, and three, if not four of them eye-witnesses—assert that this so-called miracle took place, that the tongue was in all cases excised from the very root, and that the subsequent speech of the victims was perfect.* Yet who but would join with Gibbon when he said that the statement would command the assent of those alone who believe in the orthodoxy of the sufferers?† What rational person of our day but would deem the whole affair, amply attested as it is, a fable? Yet it fully appears that the only error or fallacy in this case lies with those who believe it possible for so many such witnesses to concur in attesting a fable. That persons who have had their tongues cut out continue to be able to speak, is certified by Sir John Malcolm in his *Sketches of Persia*, from personal observation; and the testimony has been corroborated by Sir John M'Neill, our late ambassador in that country. It appears that when the forepart of the tongue is alone cut off, speech is lost; but that when the whole loose part of the member is excised, the sufferer continues to talk quite intelligibly to his friends.‡

It has been remarked that the modern physicist professes a peculiar need for scepticism where the alleged new fact is of a marvellous nature. If commonplace and uninteresting, he may allow it to pass; but if it gratify the feeling of wonder in simple

* Newman's *Essay on the Miracles recorded in the Ecclesiastical History of Early Ages*, 1843, p. 208.

† *Decline and Fall*, &c., chap. xxxvii.

‡ *Notes and Queries*, May 22, 1858.

minds, then no degree of rigour is too much for it. A modern continental writer lays down as a principle, that testimony becomes uncertain whenever man passes beyond the *terra firma* of the natural. Once past that bound, 'his discernment, his self-possession, his common sense appear to abandon him.' Now this principle, as it has been called, has a ruinous *petitio principii* at its basis. It is assumed that the bounds of the natural are known, which is by no means the case. The scientific few may, indeed, have established in their own minds certain points or lines bounding the natural—in reality, a boundary that never was settled, and never will be ; but with the great bulk of ordinary people, there is no such definition. Any external fact presented to their senses they usually report with a fidelity which may be affected to some degree by their power of observing, but is seldom seen to be troubled by any consideration of the fact being ultra-natural or ultra-scientific. If they speak of a matter which has been under their direct observation, they usually give us simply their own impressions. In regard to these, where the usual requisites for testimony have been fulfilled—that is, where there is a sufficient number of witnesses, speaking from the reports of their own senses, and under no temptation to falsehood—we certainly have an abundance of cases where the facts, doubted at first, proved afterwards to be strictly true, however partially misunderstood. Let me just remind the reader of one or two examples. Two thousand people at Milan saw what they thought an angel hovering in the air ; and after a little time spent in wondering, it proved to be the reflection of one of the statues of a neighbouring church, the image of which had been caught on the surface of a cloud. It has never been insinuated in this case, that the object was in any degree misrepresented by the people before its character was ascertained. It used to be alleged by the peasantry at Plausac, near Clermont in France, that, whenever thunder was near, three balls of fire were seen on the points of the cross surmounting the church. The scientific were of course scornful as to the alleged fact ; and no one who followed Mr Faraday's rule of setting out with just notions of the possible, could then be otherwise. In 1752, when D'Abilard repeated Franklin's experiments at Marly, the philosophers of Paris came to see that the three fire-balls on Plausac church were a truth. Neither in this case could it be said that the people had indulged in any exaggeration. They had represented the fact, before the days of scientific electricity, exactly as they would have represented it afterwards ; and

indeed it could never have well been represented otherwise than it was.

To turn to the old historians and travellers. Ælian gives an account of a flame constantly sustained without fuel on the altar of Venus at Mount Erycus in Sicily : Bayle deemed it a fable ; but we now know that copious jets of carburetted hydrogen gas are produced in many places ; so that Ælian's statement may be, and in all probability was, a truth. A hundred years ago, narrations as to showers of blood and of nutritive substances were discredited, as irreconcilable with nature : they are now accepted as intelligible natural phenomena. In all these cases, the report was truthful as to the appearances presented, as truthful as any such report could well be in these more enlightened days.

‘ Herodotus asserted that there was a certain small bird, which, as often as the crocodiles came on shore from the river Nile, flew fearlessly within their jaws, and relieved them of a peculiar kind of leeches which infested their throats. This ancient historian added that, although other birds invariably avoided the crocodile, it never did this bird any injury. So extraordinary a story was treated as fabulous by the naturalists. It is, notwithstanding, strictly true. M. Geoffroy St Hilaire, an eminent and accurate French naturalist, confirms the fact beyond doubt. The bird alluded to is the Egyptian plover (*Charadrius Egyptiacus*), which sometimes enters the mouth of the crocodile, attracted thither, not, according to his account, by leeches, but by a small insect like a gnat, which frequents the banks of the Nile in great quantities. When the crocodile comes on shore to repose, he is assailed by swarms of these gnats, which get into his mouth in such numbers, that his palate, naturally of a bright-yellow colour, appears covered with a blackish-brown crust. Then it is that the little plover, which lives on these insects, comes to the aid of the half-choked crocodile, and relieves him of his tormentors ; and this without any risk, as the crocodile, before shutting his mouth, takes care, by a preparatory movement, to warn the bird to be off. This singular process is, moreover, not confined to the crocodiles of Egypt ; it has been noticed in those of the West Indies, where, when attacked in a similar manner by small flies called *marin-gouins*, a little bird (*Todus viridis*) which lives chiefly on flies and insects, performs the same kind office.’* Here, too, it is seen that the original account, however wonderful, was just as correctly

* Stanley's *Familiar History of Birds*.

stated, so far as appearances went, as it could now be. Herodotus, by the way, is a remarkable example of an author who fearlessly stated things likely to be, through ignorance, disbelieved, but which subsequent knowledge has verified. A modern author, thoroughly drilled on Mr Faraday's principle, would have withheld all facts of a wonderful or unaccountable nature, and found it temporarily to his account to do so. But, in that case, it is evident we should have lost many truths which otherwise would have come to us.

The truth is, when the continental writer in question spoke of the natural, he spoke of a thing purely arbitrary—that is, his own idea of what constitutes the range of nature. His idea of the natural would be found to coincide with no other man's. He therefore proceeds upon a most fallacious principle when he insinuates reasons for incredulity on any such grounds.

It is of course to be fully admitted that we naturally give a more ready reception to facts which coincide with our experience of the course of nature than to others. And it is but a following out of the same principle that, when new facts are reported which we cannot trace into connection with any ascertained natural law, we should exercise some caution about them—inquire into them—look to the character, and ask further evidence of the reporters, if it seem necessary or be obtainable—and try particulars in this direction and in that, with a view to finding out some relation in them to things already admitted. But to make the reception of facts depend wholly on such a relation, without regard to the amount or nature of the testimony for them, is absurd. Previous to the appearance of Dr Ferriar's work on Apparitions, the philosophy of the eighteenth century turned with disdain from the numberless recitals spread over all ages regarding such alleged phenomena, deeming them all mere fancies or impostures. Dr Ferriar, followed by Dr Hibbert, explained a class of these appearances as real impressions of the brain occurring under certain morbid conditions; and instantly the testimony for that class of cases, now called 'spectral illusions,' acquired a respect which had been wholly denied to it before. Did not the result in this case prove that the rejection of so much testimony merely for want of some philosophical relation into which to place the facts, was a preposterous error? Some simple caution as to what the facts and the testimony pointed to, was all that a just philosophy demanded.

When, a few years ago, persons professing what was called electro-biology seemed able to throw certain special subjects into a

condition in which they were forced to believe anything told them, and unable to make any movement forbidden to them, the whole apparent phenomena were proclaimed to be a system of imposture. Individuals known as respectable members of society went upon the platform professing to be incredulous—appeared to be, unexpectedly to themselves, subjected to the will of the experimenter—and were by the remainder of the sceptical believed to be confederates of a quack. Hundreds of witnesses were insufficient to prove that there was anything true in electro-biology; but at length a scientific writer ventured to shew that there might be, after all, a philosophical explanation of the mystery. ‘When the attention of man or animal,’ said he, ‘is deeply engrossed or absorbed by a given idea associated with movement, a current of nervous force is sent into the muscles, which produces a corresponding motion, not only *without* any conscious effort of volition, but even in *opposition* to volition, in many instances . . . the individual is so completely *mono-ideised*, or under the influence of the dominant idea, as to be incapable of exerting any restraining or opposing power.’ The condition of being spell-bound by danger, and the fascination exercised by serpents over birds, were explained on the same *mono-idea-dynamic* principle. With little, if any, examination of this theory—satisfied, apparently, with the mere *words*, ‘dominant idea,’ ‘mono-ideised,’ and ‘mono-idea-dynamic action’—those who had scouted the solemn averments of hundreds of respectable persons as to a matter of simple consciousness, about which they could not be deceived, all at once *believed*. It was as much as to say, external facts are in certain cases nothing, and a scientific theory everything. Science is bound to view a mass of human testimony on a certain class of subjects with disdain; the eyes, the touch, the whole consciousness of thousands, are to be held as vainly reporting their experiences: a hypothesis is started, connecting the facts with something already admitted, and the testimony instantly becomes entitled to credit. The impostors of yesterday are the true men of to-day, by no new-found fidelity in them, but by virtue of a mere conjecture on the part of somebody else. Nay, such a hypothesis may smile upon only some province of the whole cluster of phenomena, and we see science then, with the nicest discrimination, sanctioning a corresponding mass of the testimony, but leaving the rest in the limbo of reprobation. Now, surely this is utterly indefensible. If a multitude of witnesses for an outward fact, or an experience of consciousness, be a thing of any validity in the frame of the social world, its value must depend on some-

thing in itself, or in its own character : things external to it, though they may be in harmony, can be of no account whatever. If it is of no value, how is the occasional confirmation of its reports by science, or so-called science, to be accounted for ? How is it to be expected beforehand, that, out of some thousands of witnesses, or some hundreds of thousands of acts of witness-ship, about some class of phenomena, only some special number are veracious, who and which coincide with some conjecture to be *afterwards* started ? The truth is, these occasional verifications of universal averments form an overwhelming proof that all general testimonies to facts, however extraordinary or irrelative to ascertained laws, have in them some element of truth ; in other words, universal false observation, universal false consciousness, and universal false reporting, are moral impossibilities.

All must see that the verity of the Christian miracles—assuming these to be, as usually heretofore considered, events contrary to the course of nature—could no longer be sustained, if the modern physicist's view of testimony were to be accepted. For, if simply extraordinary facts, which the observers bring forward as merely standing a little out from, but expected in time to come within, the frontier of the ascertained natural laws, are to be in every case explained away, and rejected as results of false observation and unfaithful reporting, much more must we apply the rule to alleged facts professedly beyond the limits of nature. If unexpected natural phenomena, which thousands of living persons declare they have witnessed, are to be rejected as insufficiently certified, we cannot save from a worse fate miracles which are only reported to us as having happened before the eyes of men who lived many centuries ago. The depreciators of testimony, to be consistent, are evidently under an obligation to abandon all such arguments as those of Dr Chalmers for the verity of miracles. Mr Faraday has foreseen the demand that would be made upon him, and he tries to evade it. He tells us that the truth of a future life 'is made known to [man] by other teaching than his own, and is received through *simple belief of the testimony given.*' There is, he alleges, '*an absolute distinction between religious and ordinary belief.*' He refuses, in short, '*to apply those mental operations which I think good in respect of high things [matters of science], to the very highest.*' I shall be reproached, he adds, with this as a weakness ; but 'I am content to bear the reproach.' Very fortunate he is so, for that a reproach must be borne, in the eyes of all who have any reverence for human reason, is undoubted. On the principle advocated by the learned professor, there is of course no

heathenism or heresy which might not be defended ; no tyranny over men's souls which might not be legitimately practised. We have often heard that minds which profess extreme scepticism and doubtfulness in matters generally received, are liable to great facility in certain directions ; and assuredly a better example of that frame of mind could not be desired. Most Christians will probably feel that it is better to hold fast by the doctrine of a general validity in human testimony, and in this defensible position, guard a great argument for the verity of acts and events on which their religion in part is founded, than give up that argument on a speculative ground which has nothing more in view, at the best, than to save human science from occasionally making a hasty conclusion.

The sceptical doctrine as to observation and testimony is precisely identical with the celebrated argument of David Hume against miracles, with but this difference, that it is extended to whatever fact we may be unable at the instant to co-ordinate with ascertained natural laws. The philosopher said : ' A miracle is a violation of the laws of nature, and as a firm and unalterable experience has established these laws, the proof against a miracle is as entire as any argument from experience can possibly be.' To establish a miracle, says he, would require an amount and degree of testimony, the falsehood of which would be ' more miraculous than the fact it endeavours to establish ;' no such testimony can be had ; therefore, miracles are not capable of proof. He speaks of testimony in the same manner as the modern physicists, there being no miracle attested, he says, ' by a sufficient number of men, of such unquestioned good sense, education, and learning, as to secure us against all delusion in themselves ; of such undoubted integrity, as to place them beyond all suspicion of a design to deceive others ; of such credit and reputation in the eyes of mankind, as to have a great deal to lose in case of their being detected in any falsehood ; and at the same time attesting facts, performed in such a public manner, and in so celebrated a part of the world, as to render the detection unavoidable ; all which circumstances are requisite to give us a full assurance in the testimony of man.' Which is just as much as to say, if we choose to disbelieve any alleged fact, we can never be at a loss to pick out some imperfection, real or supposed, in the evidence on which it rests, and so get quit of it. Dr Campbell, as most people are aware, met Hume's argument in an effective manner. It was assumed that an unalterable experience had fixed nature in a particular way,

from which there was and could be no swerving, whereas the very facts which Hume repudiated were parts of our experience, shewing that the rule is not fixed : Mr Hume's argument was consequently 'an example of that paralogism called begging the question.' In all the sceptical objections to testimony on simply extraordinary matters, there is in like manner an assumption as to some code of truths which they violate or stand opposed to, when this is in reality the very point requiring to be proved.

It is not the purpose of this tract to inquire into the nature of miracles, or their serviceableness in establishing any religious system. All that is meant is—if miracles are violations or interruptions of the course of nature, and yet can be proved by human testimony, much more are we entitled to receive, upon human testimony, facts extraordinary, but not supposed to be, or set forth as, discrepant in any way from the course of nature. The sole purpose is to shew that the reigning views of physicists on this point are strict beyond what is, on various considerations, justifiable, and that, consequently, true science must suffer.

That caution should ever be a ruling principle with scientific inquirers, is of course admitted. But caution in experimenting and generalising is a very different thing from raising *a priori* objections, and coming to adverse conclusions without inquiry. There we can only see a salutary and useful caution run mad ; a reason for care and discrimination converted into a barrier against the progress of knowledge in one large section of the system of knowable things. The primary error may be said to arise from habits of mind induced by exclusive dealing with one class of facts. Constantly engaged with matters which can be proved either by mathematics or by tangible experiment, the physicist comes to disrespect all those for which there only can be that approximation to proof which we derive from the occasional observance of occurrences and results. Seeing that laborious men of science sometimes deceive themselves in their laboratories, he thinks how much more likely is it that uninstructed observers of common facts are mistaken. In reality, there is a great distinction between a scientific truth and one of the class of facts in question. As already pointed out, there is both the thing seen and our inference as to what we saw. A scientific truth is the result of a mental operation (generalisation), in which many pieces of sense-witness-ship are combined : here the liability to mistake is necessarily very great. It may therefore be quite true, as Mitscherlich has said, that fourteen years is little enough for the establishment of a truth in chemistry ; and Baron Cuvier may have been

right in asking a young student, who came to him with a new organ in one of the lower animals, to return to him with the same discovery in six months. It may be true, as has been alleged, that very few men of science have the good fortune ever to discover a single new fact, or to 'describe with irreversible fidelity a new phenomenon of any significance.*' But all this is nothing to the purpose, when we come to judge of what Dr Chalmers calls 'plain palpable facts.' When a fact is 'plain and palpable,' as the performing of a painless surgical operation, or the seeing of some person or object of a cognizable character, or the hearing of some sound, and when many testify to a uniform purport on the subject, there can be no reasonable doubt as far as the report of the senses is concerned, whatever there may be as to the cause, nature, or meaning of the fact. To return to the example of the steamer passing along a shore where no such vessel had ever been seen or heard of. It might well be reported of by the eye-witnesses, with confident but false allegations as to the means by which it was impelled against wind and tide. Most unreasonable it would be, in that case, to doubt the plain and palpable fact, that a vessel, moving against wind and tide, had been seen, however novel and unaccountable it might be, and however absurd might be the popular suppositions regarding the motive power. All that is necessary in such a case is to separate the sense-witness-ship from the hypothesis, receiving the former under certain cautions : that is to say, taking care that the witnesses are honest and intelligent persons, who have not been under any extraordinary excitement on the occasion, and whose report is in all essential particulars uniform and self-consistent.

The final conclusion from this view of testimony is, that the arguments of Chalmers, Abercrombie, and other Christian apologists, are sound : miracles, though they present themselves as independent of, or contrary to, the ordinary laws of nature, must be received, when advanced on the evidence of a multitude of honest, unprejudiced men, presumably able to take just cognizance of the external facts. And, of course, if such arguments in behalf of the verity of miracles are good, still better are they in favour of alleged facts which are only of an extraordinary nature, and professedly hopeful as the possible subjects of some unknown natural law ; if such arguments substantiate facts reported by ancient writers as happening in a distant country, and among an uneducated people, still better are they in favour

* *Lectures on the Atomic Theory, &c.* By Samuel Brown. 2 vols. 1853.

of facts reported by men of our own day, as happening in comparatively enlightened countries—facts which multitudes tell us we may see for ourselves, if we will take the trouble. Not, be it strictly observed, that the Christian miracles are to be considered as depending solely on such arguments: most men feel that they have other recommendations. But, strictly, *as far as they depend on human testimony*, the rule which we use for them we must use for other things: contrasted with all inferior wonders, we must regard them as the major proposition, *quæ continet in se minorem*.

If I have here given a true view of human testimony, it will follow that, amongst the vast multitude of alleged things often heard of and habitually rejected, there are many entitled to more respect than they ordinarily receive. It is a strange thought; but possibly some truths may have been knocking at the door of human faith for thousands of years, and are not destined to be taken in for many yet to come—or, at the utmost, may long receive but an unhonouring sanction from the vulgar and obscure, all owing to this principle of scepticism, that facts are valueless without an obvious relation to ascertained law. Should the contrary and (as I think) more inductive principle be ever adopted, that facts rightly testified to are worthy of a hearing, with a view to the ascertaining of some law under which they may be classed, a liberal retrospect along the history of knowledge will probably shew to us that, even amongst what have been considered as the superstitions of mankind, there are some valuable realities. Wherever there is a perseverance and uniformity of report on almost any subject, however heterodox it may have appeared, there may we look with some hopefulness that a principle or law will be found, if duly sought for. There is a whole class of alleged phenomena, of a mystically psychical character, mixing with the chronicles of false religions and of hagiology, in which it seems not unlikely that we might discover some golden grains. Perhaps, nay, probably, some mystic law, centring deep in our nature, and touching far-distant spheres of 'untried being,' runs through these undefined phenomena; which, if it ever be ascertained, will throw not a little light upon the past beliefs and actions of mankind—perhaps add to our assurance that there is an immaterial and immortal part within us, and a world of relation beyond that now pressing upon our senses.

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